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April 19 1928

Tidewater Red Cypress

U. S. GOVERNMENT REPORT

(Department of Agriculture, Forest Service---
Bulletin Number 95)

and

TECHNICAL NOTE NUMBER 173,

Forest Products Laboratory,
U. S. Forest Service



TRADEMARKING, THE IDENTIFICATION OF GENUINE TIDEWATER CYPRESS

IDENTIFY IT BY THIS TRADE MARK



**Southern Cypress
Manufacturers' Association**

Poydras Building,
New Orleans, Louisiana

Graham Building,
Jacksonville, Florida

"CYPRESSES"

"Although seven species commonly known as cypresses grow in the United States, only one, bald cypress (*Taxodium distichum*) is of great commercial importance, *Taxodium imbricarium*, a closely related species, occurs in the same range as bald cypress and is cut and used with it. The others, a distinct group of trees, are Monterey cypress (*Cupressus macrocarpa*), Gowen cypress (*Cupressus goveniana*), Macnab cypress (*Cupressus macnabiana*), Arizona cypress (*Cupressus arizonica*) and smooth-bark cypress (*Cupressus glabra*). All of these, because of their limited supply, are put to but small and local use.

BALD CYPRESS

(*Taxodium Distichum*)

Physical Properties

Dry Weight of Wood.—27.6 pounds per cubic foot (Sargent.)

Specific Gravity.—0.45. (Sargent.)

Ash.—0.42 per cent of dry weight of wood. (Sargent.)

Fuel Value.—61 per cent that of white oak. (Sargent.)

Breaking Strength (modulus of rupture).—7,900 pounds per square inch on pieces 4 by 4 by 60 inches, with 12 per cent of moisture. (Forest Service Circular 15.)

Factor of Stiffness (modulus of elasticity).—1,290,000 pounds per square inch on pieces 4 by 4 by 60 inches, with 12 per cent of moisture. (Forest Service Circular 15.)

Character and Qualities.—Light, soft, not strong, grain rather fine, straight; annual rings narrow; summerwood broad, slightly resinous, conspicuous; medullary rays numerous, very obscure; color light to dark brown, the sapwood nearly white; easily worked; very durable in contact with soil.

Growth.—Height 75 to 140 feet, diameter 3 to 6 feet, in exceptional cases 10 feet.

SUPPLY

In 1898 the amount of standing cypress in the United States was estimated to be 27,000,000,000 feet. The cut since that time has exceeded 5,000,000,000 feet, and the new growth has counterbalanced only a small part of this. A hundred years ago Michaux said: "It is highly probable that in less than two centuries the cypress will disappear from the Southern States." He was led to that prediction by observing the slow growth and the scanty reproduction of the species. At that time the cut for lumber was comparatively small, but cypress swamps were frequently cleared for rice fields. Cypress is not now being planted, and perhaps never will be, for the purpose of growing commercial timber. Natural reproduction must be depended upon, and this does not keep pace with the cutting. Few cypress trees are large enough for lumber at an age of less than two centuries, and many do not reach sufficient size until much older. The present demand requires 750,000,000 feet yearly, with a marked tendency to increase during the past

10 years. Depletion of supply in the immediate future is not likely, but every year sees a smaller quantity to draw upon. Cypress is an expensive timber to cut and log. It grows in swamps covered with water much of the time. It is customary to dig canals in which to tow the logs to the mills, or to construct railroads through the swamps, driving piles on which to rest the ties. The butt cuts of large cypress trees will not float when green, and to overcome that it is customary to girdle the standing trees several months before felling them. This permits them to dry sufficiently to float. Cypress mills operate on a large scale. In 1908 the average cut per mill was 840,000 feet. That was exceeded per mill by those cutting redwood, Douglas fir, and yellow pine, and none other. Mills cutting maple average 128,000 feet, spruce 440,000, hemlock 400,000, white pine 480,000, oak 170,000, and yellow poplar 100,000 feet per year. In 1908 more than half of the cypress lumber was sawed in Louisiana. Florida came next with about 8 per cent, while small amounts were sawed in 16 other states, including Delaware, Illinois, and Indiana, and most states south of them. The logs sawed into lumber in Indiana, Illinois, and Delaware were probably brought from States farther south.

EARLY USES

In the parts of the South settled by the Spanish, houses were generally built of cypress. A century ago there were few houses in New Orleans which were not constructed wholly or in part of this wood, and even outside of the Spanish settlements it was extensively used. Cypress shingles were regarded as so much superior to any others that their use became extensive at a very early period. They were easily made by hand, and were very cheap when suitable timber was abundant. They were split with mallet and frow and sometimes shaved with draw knives. The splitting was done parallel with the rings of annual growth, while with white pine and most other shingle timbers the splitting was done perpendicularly to the annual rings. As with many other woods, it is only the heartwood that shows great durability. The sapwood lasts but a few years when subjected to conditions favoring decay. On the other hand, instances have been cited, on what is apparently good authority, showing remarkable periods of use for heart cypress shingles. A roof at Greenwich, Conn., was laid in 1640, and was said to be serving well 250 years afterwards; another in Brooklyn, N. Y., was said to have lasted 228 years, and another at Clifton, Staten Island, had 200 years to its credit when last reported, and was still in use. Many instances of use exceeding a century are cited to show the wood's lasting qualities. This is not only true when used as roofs, but for other purposes. New Orleans cypress water mains remained sound nearly a century, and a cypress headboard at a grave in South Carolina was so well preserved after 140 years that the letters on it were easily read. Marble and sandstone grave-stones often decay and crumble in less time. A still longer period has been claimed for cypress coffins in Charleston, S. C. It is said they were found in fair condition at the time of the earthquake, though they had been in the ground since 1678.

Along the lower Mississippi River many plantations were once fenced with cypress. Some of it was made into rails, while in other cases it was used as posts with boards nailed on. Undoubtedly all of these

cases of great durability represent only heartwood, and that from mature swamp-grown trees.

South of the region of the yellow poplar, the best canoe wood in early times was cypress. Dugouts were almost the only kind of canoe made in the region. John Lawson, writing about 1714 upon the resources of North Carolina, gives valuable information upon the cypress canoes' part in the coast and river commerce at that time. ("History of Carolina"—John Lawson.) Canoes upon the rivers had a capacity of 30 barrels, and were freighted with flour, lumber, and other commodities. Some were sawed down the middle lengthwise and a piece of wood inserted to make them wider, and they then carried 80 to 100 barrels. The cypress canoe as a freight carrier was not confined to the rivers and landlocked arms of the ocean, but it ventured upon the open sea, and carried pork and other products from Albemarle Sound to Chesapeake Bay by way of the ocean passage. An adventurous canoeman made a decked cypress dugout and applied to the customs officer for clearance papers for it to sail for the Barbadoes, but the officer refused to issue the papers, declaring that the request proved the applicant's insanity.

wood of mahogany furniture. Some of the historic church doors in the South are of this wood.

Cypress knees, which are peculiar and characteristic protuberances rising from the roots to the surface of the water where the trees grow, were once much valued by negroes for beehives. The large knees are hollow and they served rustic apiarists well. The negroes made a salve of the resin obtained from the bark and cones of this tree, and used it as one of their household remedies.

EXTERIOR AND INTERIOR FINISH

Cypress is put to almost every use as an interior trim for houses. It may be finished in natural color or stained. The wood contains little resin and thus affords a good surface for paint, which it holds well. It is much used for door frames, window frames, transoms, ceiling, wainscoting, panels, doors, sash, balusters, inside blinds, brackets, newel posts, grilles, mantels, and to some extent for flooring. It is a popular wood for kitchens, where it is subjected to dampness and heat. It shrinks, swells, or warps but little, and



TIDEWATER CYPRESS TIES AND TIMBERS UNTREATED AND IN SERVICE TWENTY-EIGHT YEARS

Record exists of a cypress canoe 30 feet long, 5 wide, and with a carrying capacity of 13,000 pounds.

Builders of sailboats and small ships in the South drew liberally upon cypress for planking, decking, masts, and other parts of the vessel.

It was early manufactured into certain kinds of cooperage, and was shipped to the West Indies for use by molasses and sugar manufacturers. Cypress seems to have been one of the most important of the southern export woods very early in the commercial history of that region, though it was later replaced by white pine in some parts of the West Indies trade. A century ago the export of cypress shingles to the West Indies exceeded 100,000,000 a year. They were 22 or 44 inches long, and from 3 to 6 inches wide. In 1808 the price in the West Indies for the large size was from \$8 to \$10 a thousand, and at the shipping ports about half that.

Early builders in the South preferred cypress for door and window frames, sash and panels. Some of the old brick plantation houses are so finished. Cabinetmakers selected it in that region for the inside

is used for drainboards, sinks, kitchen and pantry tables, cupboards, and kitchen cabinets. For the same reason it is used for breadboards and wooden implements about the pantry, ironing boards, and clothes driers.

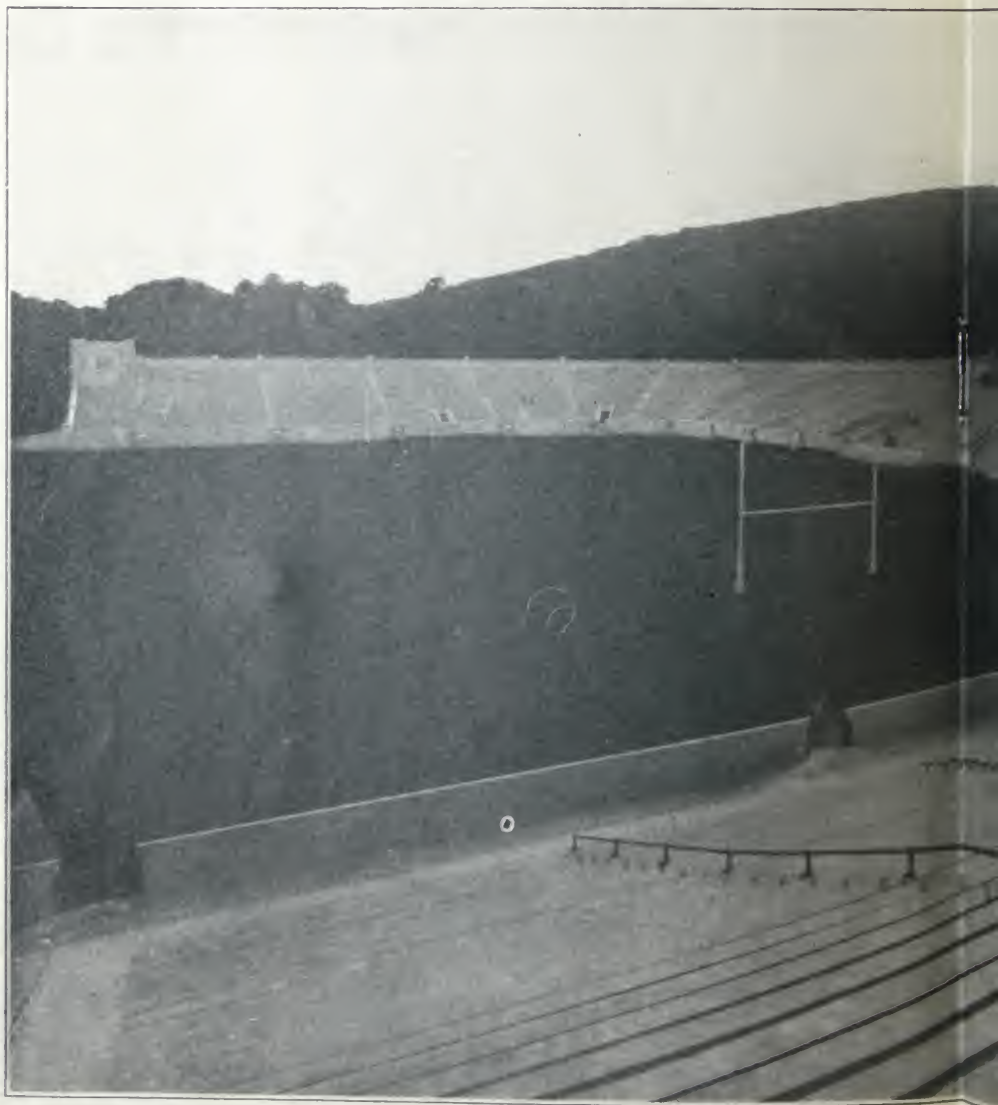
For the parts of houses exposed to the weather it serves equally well. As siding it practically wears out before it decays. When made into porch and portico columns it retains its shape, holds paint, and has sufficient strength to sustain necessary loads. It is placed as cornice, gutter, outside blinds, pilasters, and railing, and is much used for porch floors and steps.

COOPERAGE

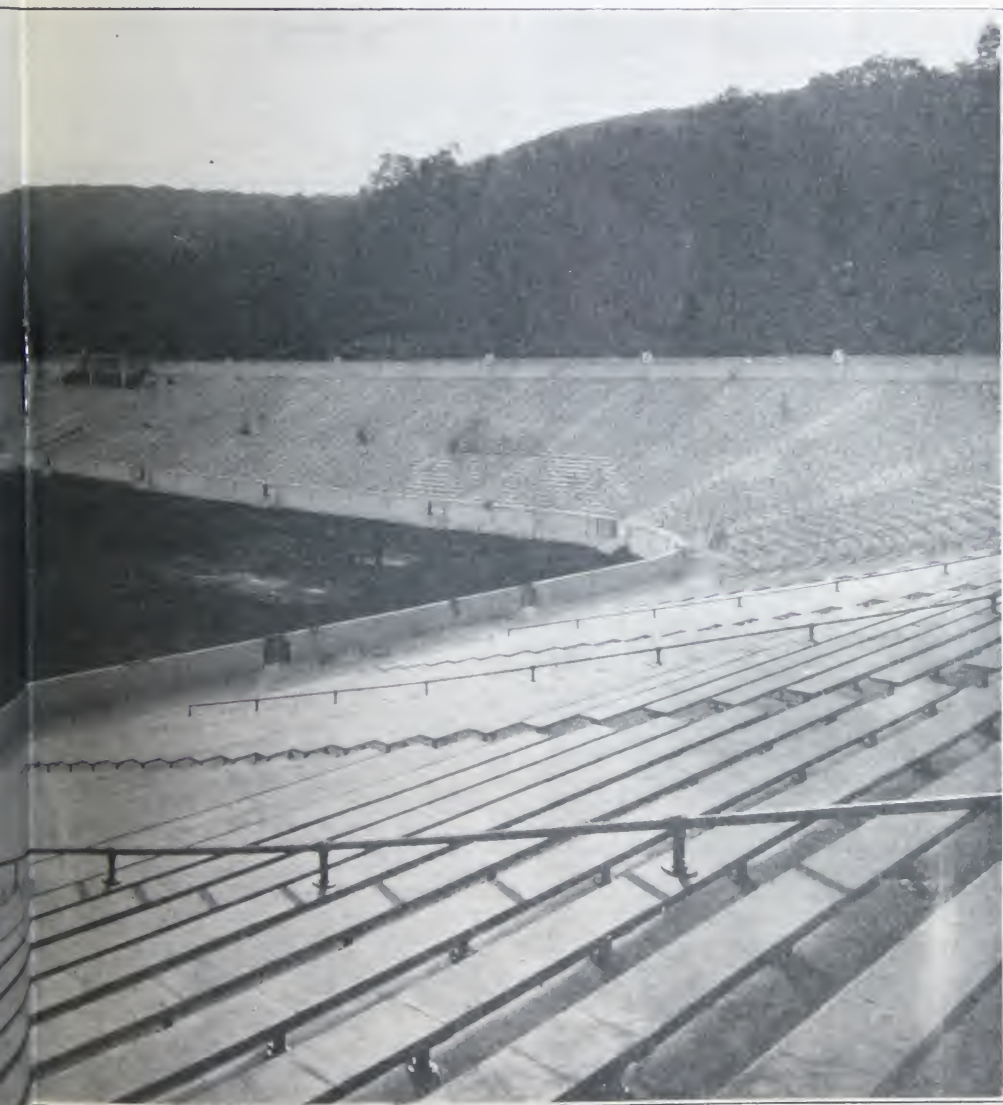
Cypress can not be substituted for white oak for the most exacting kinds of tight cooperage, but aside from that it enters into practically all kinds. The properties which fit it for such wide use are the freedom of the wood from knots and other defects which might cause leakage; the freedom from stains or other

(Continued on Page 6)

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U. S. Military Academy Stadium, West Point, N. Y. Tidewater Cypress Selection



ter
ess Selected for Seats, as the Wood Best Fitted to Withstand Exposure

COOPERAGE—Continued

chemicals by which the contents of vessels would be injured, and the long period which the wood may be expected to last. To this might be added handsome appearance, which frequently has much to do with popularizing a wood.

Tanks of cypress are made to contain the following materials: Acids, beer, cider, dyes, kraut, oil, pickles, vinegar, water, wine, and whisky. Some typewriter manufacturers have reported it to be superior to other woods for holding acid solutions for nickel and copper plating. Various kinds of water tanks are made—swimming, thrasher, windmill, sprinkling, and for railroad water stations.

Vats require the same kind of material as tanks, but there are generally distinguishing features in form or use. Cypress is manufactured into brewery vats, vats for creameries, bakeries, dye works, distilleries, and soap and starch factories. Users of cypress for brewery vats believe that its durability for this purpose is at times as much as 50 years.

Barrels, tubs, and small vessels made of staves are more directly related to cooperage, and for the manufacture of such commodities cypress has a wide use. Among vessels of that kind are those for lard, molasses, oil, sugar, wine, butter, candy, oleo, tobacco (tubs), vinegar, apple butter, jelly, fish, washtubs and washing machines for laundries and private families, and many kinds of pails and buckets, keelers, noggins, kits, and piggins. It is used rather extensively for barrels or troughs in which to salt and store meat on farms.

FARM LUMBER;

Much cypress lumber is employed in the construction of silos for storing green feed. The farmer puts the wood to many uses, in all of which it gives good service. Its lasting properties fit it well for curbs, when material is needed that resists decay. Watering troughs for farm stock and feed troughs for sheds and barns are made of it; likewise troughs or flumes for conveying water from wells or springs. Resistance to decay fits it for stable floors and timbers near the ground, as well as for fences, gates, and especially for fence posts and telephone poles. It is one of the best available woods for picket fences, because it shows paint well and holds it for many years, but lasts a long time without it. It has been widely used for this purpose not only in the South, where cypress grows, but in regions remote from its range.

USE IN GREENHOUSES

One of the widest uses of cypress is in greenhouse construction. It is pre-eminently fitted for that trying place, where it is called upon to resist dampness, excessive heat, and all the elements that hasten decay. It is said that no other lumber approaches cypress in the quantity used for green and hot houses. It is manufactured into sash, frames, benches, boxes, and practically all else that the builder needs. It has replaced white pine to a large degree, because it is cheaper and in some ways better.

MISCELLANEOUS USES

In some southern cities heavy cypress planks are used for street curbing. Agricultural implement and machinery manufacturers make seed boxes of it, wagon makers employ it for beds, and carriage builders work it into panels for fine bodies. Automobile makers put it to similar use. Its slight tendency to warp has caused its employment by builders of incubators. Car shops use it for freight car siding, piano manufacturers make shipping boxes of it, and it is a material both for coffins and the boxes in which coffins are shipped. Skiffs, steamers, and yachts are occasionally finished in cypress, and many builders of gasoline launches are said to be using cypress exclusively for hull planking. It also makes handsome church pews and benches. Telephone boxes and switchboards of cypress are coming into use, and spools for some purposes are turned from the wood. Apiarists employ it for beehives; fishermen for seine floats; furniture makers for stools, tables, and curtain poles; molders and machinists use it for patterns; merchants for shelving and counter tops; railroads for shims, and carpenters for tool boxes.

PECKY CYPRESS

It has been estimated that one-third of the cypress in the United States is diseased with a fungus popularly known as pecky, peggy, botty, or some similar name. The disease resembles that which affects the incense cedar of the Pacific Coast, and, like that, is supposed to be caused by a species of *Daedalea*. The fungus enters the living tree through broken branches, dead tops, or decaying knots, and excavates holes in the wood from a quarter of an inch to one inch wide and often several inches long. These holes are partially filled with brown powder, a deposit or product of the fungus. Though great numbers of such holes exist, and the trunks are perforated by them the trees are seldom so weakened as to be broken by the wind. When affected trees are felled, the disease quits working on the prostrate trunks.

The effect of the disease is not entirely injurious, since it is believed to act as a preservative upon the wood which remains and to hinder decay. It is a common saying, though perhaps not an entirely true one, that "pecky cypress never rots." The fact seems to be undisputed that it lasts at least as long as unaffected wood. It is not, however, as strong, because of the perforations, nor is it as handsome. The use of pecky wood is restricted to places where weakness and unattractive appearance are not objectionable. Large numbers of pecky railroad ties are laid yearly and give good results. Millions of feet of such lumber are built into sidewalks and platforms in southern towns and cities. That the disease has been a long time preying upon cypress timber is apparent from an examination of cypress logs from swamps near New Orleans, dug from alluvial deposits many feet below the present level of the Gulf of Mexico. Some of that prehistoric timber is pecky, though it has been buried during a period which some estimate at no less than 30,000 years.

Immense quantities of pecky cypress are made into fence posts, which are used by railroads of the region to fence their tracks. The diseased wood is employed also for bridge floors, foundation timbers, and for culverts, boxes, walks, benches, and partitions in greenhouses, and for barn and shed lumber."

(End of Government report.)

TECHNICAL NOTE

NUMBER 173

Forest Products Laboratory

U. S. Forest Service

MADISON, WISCONSIN

RELATIVE DURABILITY OF NATIVE WOODS

In response to numerous requests for information on the relative durability, or resistance to decay, of untreated woods, the U. S. Forest Products Laboratory, Madison, Wisconsin, has prepared the following table from the service records and information it has collected. There are not enough records in existence on some of the woods to be conclusive, and the durability figures given should be accepted only because they are based on the most complete service data anywhere obtainable, supplemented by observation and expert opinion from many sources. They are subject to correction whenever authentic service data show the necessity.

No attempt has been made to translate the relative durability given here in per cent into years of life, since the variety of climate, soil, and moisture condi-

tions to which timbers might be exposed would make such data worthless. Individual timbers of the same species may differ considerably in durability, too, according to the amount of heartwood and sapwood they contain and to their state of preservation when they are placed in service. Under any given set of conditions, however, the average service life of timbers of the different species will probably vary in proportion to the percentages given.

Black locust and osage orange are the most durable of the native woods. When exposed to conditions which favor decay they will probably last almost twice as long as white oak, and from three to four times as long as red oak. Bald cypress, redwood, catalpa, and most of the cedars are also highly durable species. Douglas fir, longleaf pine, the white pines, and western larch average only a little less durable than white oak. Hemlock, the true firs, the loblolly, the lodgepole, and western yellow pines fall considerably lower. The sapwood of practically all species has very low durability.

RELATIVE DURABILITY (RESISTANCE TO DECAY) OF UNTREATED WOODS

DURABILITY OF COMMERCIAL WHITE OAK TAKEN AS 100 PER CENT.

CONIFERS

Cedar, eastern red (juniper).....	150-200	Pine, pitch, sugar.....	45-55
Cedar, southern White.....	80-100	Pine, shortleaf.....	60-80
Cedar, other species.....	125-175	Pine, southern yellow (dense).....	80-100
Cypress, bald.....	125-175	Pine, western white.....	65-80
Douglas fir (dense).....	75-100	Pine, white.....	70-90
Douglas fir (average mill run).....	75-85	Pine, western yellow, pond, loblolly, lodgepole.....	35-50
Fir (the true firs).....	25-35	Redwood.....	125-175
Hemlock.....	35-55	Spruce, Engelmann, red, Sitka, white...	35-50
Larch, western.....	75-85	Tamarack.....	75-85
Pine, jack.....	34-45	Yew, Pacific (western).....	170—
Pine, longleaf, slash (Cuban).....	75-100		
Pine, Norway.....	45-60		

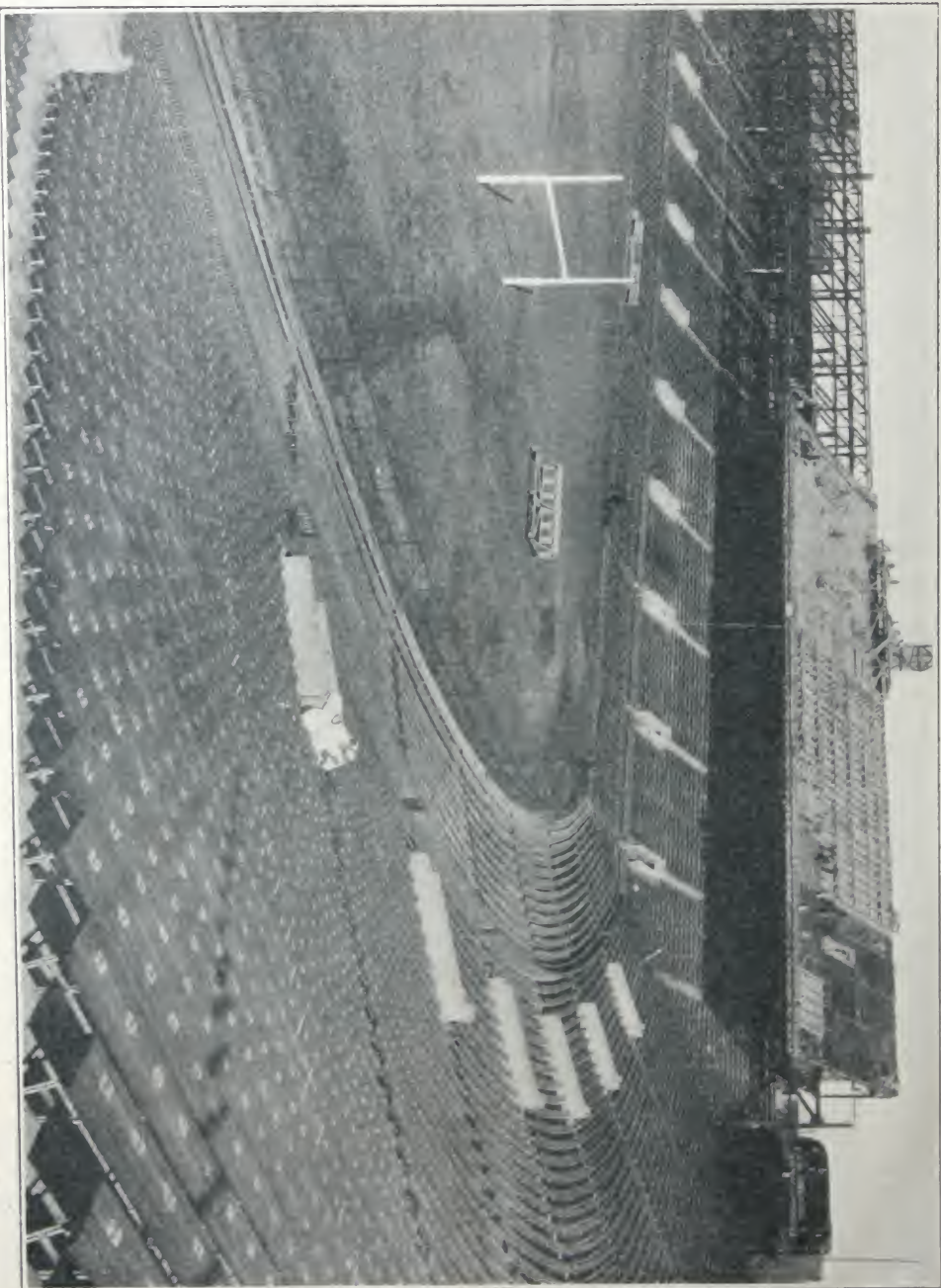
(End of Technical Note Number 173.)

A careful study and intimate knowledge of the various factors entering into the makeup of these different woods, will show that each has its own particular field of usefulness and should be used with due regard to its adaptability. Intelligent use will tend to economy in house construction, and conservation of our timber resources, which matter should be of great interest to every right thinking citizen.

Tidewater (Bald) Cypress, known as "The Wood Eternal," has many outstanding qualities giving it a

wide range of uses. The striking points being: Proven longevity—Freedom from shrinking—Splintering, etc.—Tenacity in holding nails—Economical absorption of paint, and holding same without scaling.

Tidewater Cypress derived its name from its natural habitat, the tidal swamps which embrace Louisiana, Florida, Georgia and South Carolina, and if an Architect is going to specify Cypress he should preface it with "Tidewater" and so best protect his clients' interests.



FRANKLIN FIELD, UNIVERSITY OF PENNSYLVANIA, PHILADELPHIA, PA., TIDEWATER RED CYPRESS SEATS